



MSPC Advisory Circular

ENVIRONMENTAL PROTECTION AGENCY

OFFICE OF AIR PROGRAMS • MOBILE SOURCE POLLUTION CONTROL PROGRAM

A/C No. 16

June 8, 1972

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Subject: Approval of Emission Control Modifications for High
Altitudes on New Motor Vehicles or Engines

A. Purpose

The purpose of this Advisory Circular is to explain the procedure whereby EPA will approve requests from manufacturers to modify new motor vehicles or engines to reduce emission levels at high altitudes.

B. Background

1. Recent studies have shown that emission-controlled vehicles and engines emit higher levels of pollutants at high altitudes than those same vehicles emit at low altitudes.

2. In many cases, emissions of certified vehicles and engines at higher altitudes can be significantly reduced through the use of modified calibrations in the fuel induction and ignition systems. However, the provisions of Section 203(a)(1) of the Clean Air Act make it a prohibited act for a manufacturer to distribute in commerce, sell, or offer for sale; or introduce, or deliver for introduction, into commerce; or import into the United States any new motor vehicle or motor vehicle engine unless the vehicle or engine is covered by a certificate of conformity. Thus, if a light duty vehicle or heavy duty engine manufacturer wished to modify the certified production vehicle or engine, in terms of any of the parameters listed in 40 CFR 85.89(a)(3), 40 CFR 85.89(b)(3), or 40 CFR 85.110(b)(3), the manufacturer would need to receive a determination from the Administrator that the vehicle would still be covered by the certificate of conformity then in effect.

3. If the vehicle has already been sold to an ultimate purchaser, Section 203(a)(3) of the Clean Air Act prohibits any manufacturer or dealer knowingly to remove or render inoperative any control device or element of design installed on or in the vehicle in compliance with regulations under Section 202 of the Act. Thus, manufacturers and dealers who modify the emission control system to reduce emission levels at high altitudes must first obtain a determination from the Administrator of EPA that such modification would not "render inoperative" the control system.

4. EPA encourages manufacturers to provide the vehicle owner an opportunity to have his vehicle modified so as to lower emission levels at high altitudes. This Advisory Circular explains the procedure for approving such modifications.

C. Applicability

The procedure described in this Advisory Circular covers requests from manufacturers to modify the emission control system of current model year production vehicles or engines which are intended for sale at high altitudes. Special carburetor calibrations and ignition timing changes would be examples of changes covered by the procedures described in this Advisory Circular. Upon obtaining EPA approval of the modification on production vehicles or engines, the manufacturers and dealers would be allowed to provide for the performance of these modifications as field fixes on current model year vehicles in the hands of the ultimate purchaser, as set forth in Advisory Circular No. 2.

D. Procedure

1. Requests for emission control modifications for use in high altitudes shall be submitted in accordance with 40 CFR 85.58. The testing to be required on high altitude modifications, in accordance with 40 CFR 85.58(b) is the following:

a. Fifty thousand mile Durability and four thousand mile Emission Data vehicles shall be run in those cases where the modification changes the engine-system combination of the certified vehicle or engine. Emission Data vehicles alone shall be run in those cases where the modification does not alter the configuration of the engine-system combination of the certified vehicle or engine. An example of a modification requiring Durability and Emission Data vehicle testing is the addition of an air pump. An example of a modification requiring only an Emission Data vehicle test is an alternate calibration.

b. Vehicles or engines equipped with a high altitude modification must be capable of demonstrating that they meet all applicable EPA emission control standards when tested at the EPA laboratory.

c. Manufacturers are encouraged to show, e.g. by results of tests conducted under high altitude conditions or by appropriate engineering data, what the effect of the modification is on vehicles or engines operating at high altitudes as compared to unmodified vehicles or engines of the same engine family at the same high altitude. Such data is useful to EPA in determining what impact high altitude modifications have on air quality.

d. The label prescribed under 40 CFR 85.4 shall indicate the engine tune-up specifications of the modified vehicle or engine for the high altitude for which the vehicle or engine is intended to be sold.

2. A suggested format for the application and a format for reporting data are attached to this Circular.



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Director

Mobile Source Pollution Control Program

Enclosure

8 JUN 1972

SUGGESTED FORMAT FOR
APPLICATION FOR APPROVAL OF EMISSION CONTROL MODIFICATION
FOR SPECIFIC GEOGRAPHIC AREAS

1. Manufacturer's name:
2. List of engine families subject to request:
3. Description of proposed changes:
4. Description of applicable geographic areas:
5. Range of ambient conditions
 - a. Temperature range (°F):
 - b. Barometric pressure range ("Hg.):
 - c. Humidity range (gr. H₂O):
6. Implementation plan - state how, when, where, and under what conditions the change would be implemented:
7. Proposed test program
 - a. Test conditions for mileage accumulation:
 - b. Test conditions for Federal certification:
 - c. Special test conditions for geographic areas:
8. Date of request:
9. Signature of manufacturer's representative:

Manufacturer _____

Date _____

Change No. _____

☐ Running Change☐ Addition of Vehicle or Engine

Basic Information:

Proposed implementation date _____

Engine Family _____

Control System(s) _____

Displacement(s) _____

Carburetor(s) _____

Transmission(s) _____

Other _____

Model(s) affected _____

Previous changes:

List the change numbers of previously submitted 1972 running changes
which affect the above described vehicle configurations _____

Description of change:

Reason for change:

Testing Requirements:

- ☐ No testing required
- ☐ Back-to-back _____
- ☐ 4,000 mile vehicle _____
- ☐ Other _____

Vehicle Description

Engine Cont. Sys.:

Model:

Displacement:

Transmission:

Carburetor:

Axle or N/V:

Vehicle No.:

Reasons for requirements:

General Comments:

Mfg.

EPA

Date

SUGGESTED FORMAT FOR
VEHICLE DATA SHEET - BEFORE

22

1. Vehicle Specifications: Engine Family _____
Manufacturer _____ Model _____ Serial No. _____
Displacement _____ No. Cylinders _____ Bore _____ Stroke _____
Transmission _____ Compression Ratio _____ Axle Ratio _____
Carburetor Make _____ No. of Venturis _____ Curve No. _____
Distribution Make _____ Curve No. _____ Air Conditioning _____
Advertised SAE HP _____ Curb Weight _____ Tire Size _____ N/V _____
Exhaust Control System _____ Evaporative Control System _____
Crankcase Control System _____
2. Engine Tune-up Specifications:
Basic Ignition Timing _____ Degrees _____ TDC at _____ RPM
Setting Procedure _____
Idle Speed _____ RPM in _____ Dwell _____ Idle CO _____ %
Setting Procedure _____
Spark Plug Type _____ Spark Plug Gap (in.) _____
3. Test Conditions:**
Dynamometer Inertia _____ Actual Road Load Power _____ at _____ MPH
Nominal Fuel Tank Volume (Gallons) _____
Shift Points _____
Starting Procedure * _____
4. Trap Locations for Evaporative Loss Test:
Air Cleaner _____ Canister _____ Relief Valve _____
Carb. Bowl Vent _____ Filler Cap _____ Other _____
5. Manufacturer's Emission Results:
HC-Gm/Mile _____ NOx-Gm/Mile (Corrected) _____
CO-Gm/Mile _____ Evap-Gm/Test _____

* As outlined in the Vehicle Owners Manual.
** Include temperature or barometric pressure if different from
FEDERAL REGISTER.

SUGGESTED FORMAT FOR
VEHICLE DATA SHEET - AFTER

22

1. Vehicle Specifications: Engine Family _____
Manufacturer _____ Model _____ Serial No. _____
Displacement _____ No. Cylinders _____ Bore _____ Stroke _____
Transmission _____ Compression Ratio _____ Axle Ratio _____
Carburetor Make _____ No. of Venturis _____ Curve No. _____
Distributor Make _____ Curve No. _____ Air Conditioning _____
Advertised SAE HP _____ Curb Weight _____ Tire Size _____ N/V _____
Exhaust Control System _____ Evaporative Control System _____
Crankcase Control System _____
2. Engine Tune-up Specifications:
Basic Ignition Timing _____ Degrees _____ TDC at _____ RPM
Setting Procedure _____
Idle Speed _____ RPM in _____ Dwell _____ Idle CO _____ %
Setting Procedure _____
Spark Plug Type _____ Spark Plug Gap (in.) _____
3. Test Conditions: **
Dynamometer Inertia _____ Actual Road Load Power _____ at _____ MPH
Nominal Fuel Tank Volume (Gallons) _____
Shift Points _____
Starting Procedure * _____
4. Trap Locations for Evaporative Loss Test:
Air Cleaner _____ Canister _____ Relief Valve _____
Carb. Bowl Vent _____ Filler Cap _____ Other _____
5. Manufacturer's Emission Results:
HC-Gm/Mile _____ NOx-Gm/Mile (Corrected) _____
CO-Gm/Mile _____ Evap-Gm/Test _____

* As outlined in the Vehicle Owners Manual.

** Include temperature or barometric pressure if different from
FEDERAL REGISTER.